

REMARKS

Applicants have amended claims 9 and 35, and have added new claim 43. No new matter has been added to the application by virtue of the present amendment.

Therefore, claims 9-12, 16 and 33-43 are pending in the subject application by virtue of the present amendment. It is respectfully requested that the pending claims 9-12, 16 and 33-43 be considered and passed to issuance.

Claim Rejections - 35 U.S.C. 112, first paragraph

The Examiner rejected claims 9-12, 16 and 33-42 under 35 U.S.C. 112, first paragraph.

Applicants have made appropriate amendments as suggested by the Examiner to claims 9 and 35.

Therefore, Applicants believe the rejection to the claims under 35 U.S.C. 112, first paragraph have been overcome.

Claim Rejections

The Examiner has rejected claims 9-12, 16, 33-42 under 35 U.S.C. 102(b) as anticipated by, or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tom (USP 5,704,965); and, claims 9-12, 16 and 33-42 under 35 U.S.C 102(e) as anticipated by, or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wang (USP 6,453,924).

Applicants have amended claim 9 and all remaining claims are dependent upon claim 9, as amended. Applicants have amended claim 9 to more clearly distinguish Applicants' invention

BUR920020015US2

over the prior art cited by the Examiner. Support for Applicants' amendment can be found, for example, with reference to FIGS. 1-2 and paragraphs [0020], [0023], [0024] and [0027]. Applicants respectfully submit that the prior art cited by the Examiner, individually or in combination as indicated by the Examiner, do not anticipate, teach or suggest Applicants' claim 9, as amended, or claims dependent thereupon.

Applicants have amended claim 9 to include the limitations of:

"... a substrate arranged within the deposition chamber, the substrate comprising a thin film formed thereupon by a process performed within the deposition chamber at the pre-determined pressure; and
an impurity cell for providing an impurity which is incorporated in the thin film during the same process which forms the thin film upon the substrate within the deposition chamber and at the same pre-determined pressure, the impurity cell is located entirely within the deposition chamber, the impurity cell is exposed to the same pre-determined pressure as the substrate during the process which forms the thin film incorporating the impurity, the impurity cell provides the impurity to the deposition chamber by desorption of the impurity from the impurity cell due to the pre-determined pressure in the deposition chamber during the process of forming the thin film, the impurity cell comprising: ..."

Both Tom and Wang, individually or in combination, fail to anticipate, teach or suggest Applicants' claim 9, as amended.

Tom fails to disclose an impurity cell which provides an impurity for incorporation into a thin film during the same process that the thin film is formed. Rather, Tom discloses that the thin film of chemisorbent material is first formed by a first process, then, in a different second process the impurity is introduced from an external source into the gas cylinder for adsorption by

the chemisorbent material. Further, Applicants respectfully disagree with the Examiner's characterization of the Tom reference in that Applicants respectfully submit that Tom discloses only an impurity cell (e.g. "carbon sorbent substrate") and does not disclose a substrate different from the impurity cell within the cylinder as claimed by Applicants. Tom discloses providing the impurity from a source external to the cylinder for adsorption by the carbon sorbent substrate; Tom does not provide impurity from the carbon sorbent substrate within the cylinder to another substrate within the same cylinder and the another substrate is different than the carbon sorbent substrate.

Wang fails to anticipate, teach or suggest Applicants' claim 9 limitation of "... an impurity cell for providing an impurity which is incorporated in the thin film during the same process which forms the thin film upon the substrate within the deposition chamber and at the same pre-determined pressure, the impurity cell is located entirely within the deposition chamber, the impurity cell is exposed to the same pre-determined pressure as the substrate during the process which forms the thin film incorporating the impurity, the impurity cell provides the impurity to the deposition chamber by desorption of the impurity from the impurity cell due to the pre-determined pressure in the deposition chamber during the process of forming the thin film, the impurity cell comprising: ...".

As discussed herein above with respect to Tom, Wang fails to disclose a substrate and impurity cell arranged within the same low pressure deposition chamber, the thin film is formed by that same low pressure deposition chamber, the impurity is incorporated into the thin film during the same process, the substrate upon which the thin film is formed and the impurity cell are exposed to the same pre-determined pressure during the process, and an impurity is provided from an impurity cell by desorption due to low pressure in the same deposition chamber. Rather, Wang discloses gas cylinders that are external to a semiconductor manufacturing tool (i.e. "three-chamber tool 86, 130") which processes substrates within the chambers. The gas cylinders are

coupled to the chambers by gas lines which provide gases from external to the chambers to inside the chambers for processing. The “clean room” of Wang to which the Examiner refers to as the “deposition chamber” has different chamber pressures within it, that is, the gas cylinders are at a pressure which is different than the pressure within the chambers where the substrate are located and where the thin film may be formed. It is well known to those skilled in the art of semiconductor processing that in order for a gas cylinder to provide gas to a chamber, a pressure within the gas cylinder is higher than a pressure within the chamber so that gas flows into the chamber for processing to occur. Thus, Wang is silent on a gas cylinder having the same pressure as the pressure within a chamber, and Wang is silent on a gas cylinder located within a chamber of tool 86, 130.

Therefore, Applicants believe that the rejection of the claims under 35 U.S.C. 102 and 103 have been overcome.

CONCLUSION

Prompt and favorable examination on the merits is respectfully requested. Applicants respectfully submit that the entire application is in condition for allowance. However, the Examiner is urged to call the undersigned at the number listed below if, in the Examiner's opinion, such a phone conference would aid in furthering the prosecution of this application. A fee for a one month extension of time is due by virtue of this amendment. Please charge Applicants' Deposit Account, 09-0456, for this fee and any other fees which the PTO determines are due.

Respectfully Submitted,

For: Choate et al.,

By: ___/Anthony J. Canale/_____
Anthony J. Canale
Registration No. 51,526
Agent for Applicants
Phone: (802) 769-8782
Fax: (802) 769-8938
Email: acanale@us.ibm.com

IBM Corporation
Intellectual Property Law - Zip 972E
1000 River Street
Essex Junction, Vermont 05452